REMARKS

In accordance with the foregoing, claim 27 has been cancelled and claim 13 has been amended. Claims 1-6, 13-19 and 24 are pending and claims 13-15 and 24 are under consideration.

On page 3 of the Office Action, the Examiner asserts that applicants' claim for priority is "denied." A certified English language translation of the priority document is enclosed herewith. This certified translation establishes that applicants can now rely on an earlier date of invention. Applicants are not aware of any provision allowing for a "denial" of a priority claim. MPEP §201.15 indicates that the Examiner can require a translation if applicants wish to rely on a priority date to overcome a reference. With the enclosed certified English language translation, applicants have avoided any future requirement by the Examiner pursuant to MPEP §201.15.

With regard to the rejection under 35 U.S.C. §112, first paragraph, claim 27 has been cancelled without prejudice or disclaimer of the subject matter.

Claim 13-15, 24 and 27 are rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5, 759,581 to Baensch et al. in view of PCT Publication No. WO 00/40617 to Van Soest et al. and U.S. Patent No. 6,822,091 to Kesselmans et al. The present invention distinguishes over the cited references at least because of the claimed particle diameter and the claimed amount of amylose and amylopectin present on the exterior of the starch particle. These two features will be discussed in turn below.

PARTICLE DIAMETER

Claim 13 clearly recites that "10% or more of all functional starch powder particles observable in the field of vision at a magnification of 600 are starch particles with a particle size of 50 to 500 µm." By controlling the particle size of the starch particles in the range of 50 to 500 µm, satisfactory sustained release properties may be obtained. See Specification at paragraph [0061], lines 21-38.

In response to applicants' previous arguments regarding the particle diameter, the Examiner now relies upon Van Soest et al. The Examiner argues that it would have been obvious to use a larger particle diameter in Baensch et al. because both Baensch et al. and Van Soest et al. "teach the preparation of starch microparticles." See page 10 of the Office Action.

The method of Van Soest et al. requires a cross-linking step. Neither the claims nor Baensch et al.mention cross-linking. In addition, Van Soest et al. describes that small starch particles having a particle size of 50nm to 100μm are highly desirable (page 1, lines 5-6 of Van

Soest et al.). In fact, the Examples of Van Soest et al. only disclose starch particles with a particle size of <600nm or 1-10 μm. Therefore, applicants believe that Van Soest et al. teaches away from a starch powder with a large particle diameter.

Even if Van Soest et al. did suggest a larger particle diameter, Baensch et al. prohibits any increase in the particle size. Baensch et al. teaches that the starch particles disclosed in the reference are intended to be used as a fat substitute. Specifically, column 1, line 65 through column 2, line 3 of the reference describe:

> The purpose of the present invention is therefore to provide a new kind of food grade texture agent which presents all the characteristics to be usable as a fat and/or oil replacer, especially to produce a fatty mouth-feel and which can be produced in a relatively easy and inexpensive manner avoiding the use of solvents and/or other chemicals.

Baensch et al. also makes it very clear that a small particle diameter is important to achieve a good fat replacement. Baensch et al. teaches away from a larger particle diameter. Column 1, lines 39-54 of the reference describe the particle size as follows (with emphasis added):

> [A] good fat-mimetic system tries to achieve the viscous-lubricitious-absorptive profile of the fat itself. Since this cannot be readily accomplished with any single ingredient except for the synthetic fat substitutes, the most practical way to accomplish this is by using a combination of materials that can supply the desired sensory properties. They generally consist in a combination of water with thickening agent, soluble bulking agents and/or microparticulate components, with or without surface active lipids, the whole producing a <u>creamy texture</u>. The microparticulates provide <u>a ball-bearing effect which improves and smoothes out the flow properties of the fat-replacer system and thus enhances the fatty perception of the food. They are usually insoluble materials, typically smaller than 3 microns</u>, which are not perceived as particles by the tongue.

In this excerpt, Baensch makes it clear that prior art usually used a particle diameter smaller than 3 microns. Baensch et al. describes at column 2, lines 52-61 that the particles being proposed in the reference have a slightly larger diameter. This excerpt provides (with emphasis added):

> The average diameter of the particles is of about 15μ, whereas the particles size distribution is such that 90% of the particles have a diameter in the range of about 5 to 30μ. Despite the fact that the above <u>sizes are somewhat above the usual size of particles to be perceived by the tongue,</u> the particulate starch according to the invention is practically not perceived as particles by the tongue thanks to the gelled soft structure thereof, and thus constitutes a perfect fat-mimetic system to be used in food preparations.

There are numerous places in the reference, which make it very clear that the particle size is extremely important to achieve the desired mouth texture. For example, column 7, lines 29-31 provides:

> The particle size of the rice flour is important with regard to sensory properties (graininess) and structure formation (gel strength).

On the other hand, Van Soest et al. describes that the starch particles proposed therein have a very different use. Page 7, line 30 through page 8, line 2 provides:

> The starch particles can be used, inter alia, in paper, textiles, explosives, foams, adhesives, hot melts, detergents, hydrogels, fertilisers, foods, artificial odours and flavourings, pharmaceutical and cosmetic products, tissues, soil improvers, pesticides, coatings, coatings removable by a mild treatment, for instance by means of enzymes or hot water, paints, inks, toners, organic reactions, catalysis, ceramics and diagnostic agents. The quantities to be used are the quantities customary for the use concerned.

It is difficult to imagine that any of these uses could be mistaken for dietary fat.

AMYLOSE & AMYLOPECTIN

Applicants previously argued that the combination of references relied upon by the Examiner would not have 10-90% by weight of the total amylose and amylopectin present on the exteriors of the starch particles. Paragraph [0070] of applicants' published application describes that amylose and amylopectin are released by heating in the presence of water, as follows:

> When starch particles constituting the starch raw material is heated in the presence of water, they expand near a gelatinization initiation temperature intrinsic to the starch particles. During the swelling, in the starch particles of the starch raw material, the hydrogen bonds of amylose and amylopectin, which constitute the shells of the starch particles, are destroyed by the heating, and water intrudes into the interiors of the starch particles, so that amylose and amylopectin in the interiors of the particles are decreased in molecular weight by heat to be released to the exteriors of the starch particles.

Paragraph [0077] of the published application describes that to control the amount of amylose and amylopectin released to the exterior of the starch particles, not all of the shell structures of the starch particles are destroyed.

Perhaps the Examiner believes that because Baensch et al. heats in the presence of water, Baensch et al. would also release amylose and amylopectin, as claimed. Baensch et al. describes that heating in the presence of water causes the effects described at column 3, line 23-29 as follows:

> The conditions used according to the present invention are aimed to a partial gelatinization of the high amylose starch and full gelatinization of the starch of cereal flour. Full gelatinization of the high amylose starch, e.g. by high temperatures, as well as complete disruption and loss of integrity of the high amylose starch granules by applying high pressure or high shear mixing should be avoided.

At column 2, lines 48-53, Baensch et al. describes that the crystal structure is not destroyed as follows:

The particulate product of the invention is thus obtained in the form of grains having a gelled soft structure, which retained in fact the non crystalline structure of the starting starch used. The particles have not been chemically modified nor altered by the controlled thermal and mechanical treatment, and have proven to be resistant to shearing, heating (up to 125°C.) and acid, as well as swelling resistant, for example in aqueous medium up to 120° C.

Maintaining the crystalline structure is the opposite releasing amylose and amylopectin to the exteriors of the starch particles.

The present invention, which releases the amylose and amylopectin, uses significantly more water than the method of Baensch et al., which retains the amylose and amylopectin. The following excerpts from paragraphs [0066] and [0069] of the published application indicate that the amount of water should be 40% by weight or more:

[0066]The functional starch powder of the invention is produced through a step of heating a starch raw material in the presence of water at 60 to 150° C. to swell some or all of starch particles of the starch raw material. . . .

[0069]The term "in the presence of water" used herein with respect to the starch raw material means a state in which the starch raw material and water are present and the water content is 40% by weight or more. . . .

Independent claim 13 has been amended to specifically recite that the starch material is heated in the presence of <u>40% by weight or more</u> water.

Baensch et al. uses much less water. Column 6, lines 8-20 of Baensh et al. describe that the starch is heated in the presence of 10-30% water, as follows:

[T]he optimal temperature range with high amylose starch alone is between 90° and 100° C., more particularly 90° to 95° C. with "Amaizo" and 95° to 100° C. with "Eurylon", whereas this temperature range can be somewhat lowered until 80° to 90° C. when the high amylose starch is mixed with rice flour for example.

Of course, and as already stated before, the stirring and shearing conditions during heating and cooling are very important to avoid aggregation of the product.

In practice, the initial ratio of high amylose starch to water is about 10 to 30% weight when used alone, and of about 2.5 to 15% weight when used with rice flour for example, this latter been used at a ratio of about 5 to 15% weight.

To summarize, Baensch et al. teaches that the amylose and amylopectin must not be relased to the exteriors of the starch particles. Baensch et al. also requires that significantly less water be used in the process.

Bridging pages 7 and 8 of the Office Action, the Examiner continues to mention Kesselmans et al. The Examiner asserts that the reference proves starch particles isolated from potato tubers usually contain about 20% amylose and 80% amylopectin. However, as described previously, the relative amounts of the amylose and amylopectin are somewhat irrelevant. The

claims refer to the amount of amylose and amylopectin present on the exterior of the starch particles. Kesselmans is silent about where those amylose and amylopectin are present. On the other hand, in the present invention, 10 to 90% by weight of the total amylose and amylopectin in the functional starch powder is present on the exteriors of the starch particles. Further, Kesselmans does no provide any hint or reason suggesting that amylose and amylopectin should be on the exterior of the particles. For example, Kesselmans does not describe a relationship between the amount of amylose and amylopectin and release-sustaining properties. The present application, on the other hand, describes that if the amount of amylose and amylopectin released to the exteriors of the starch particles is controlled within a range of 10 to 90% by weight, satisfactory release-sustaining properties may be obtained.

Based on the foregoing, it should be very clear that no proper combination of the references suggests 10-90% of the amylose and amylopectin being present on the exteriors of the starch particles, as claimed.

At least in view of the deficiencies discussed above, it is submitted the prior art rejection should be withdrawn. There being no further outstanding objections or rejections, it is submitted the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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